

Addressing the Standards.

The hydroponics lesson relates to the following National Science Education Standards (NRC 1996):

Teaching Standard A

Teachers of science plan an inquiry-based science program for their students. In doing this, teachers

- develop a framework of yearlong and short-term goals for students;
- select science content and adapt and design curricula to meet the interests, knowledge, understanding, abilities, and experiences of students;
- select teaching and assessment strategies that support the development of student understanding and nurture a community of science learners; and
- work together as colleagues within and across disciplines and grade levels.

Teaching Standard B

Teachers of science guide and facilitate learning. In doing this, teachers

- focus and support inquiries while interacting with students;
- orchestrate discourse about scientific ideas among students;
- challenge students to accept and share responsibility for their own learning;
- recognize and respond to student diversity and encourage all students to participate fully in science learning; and
- encourage and model the skills of scientific inquiry and the curiosity, openness to new ideas and data, and skepticism that characterize science.

Teaching Standard C

Teachers of science engage in ongoing assessment of their teaching and of student learning. In doing this, teachers

- use multiple methods and systematically gather data about student understanding and ability;
- analyze assessment data to guide teaching;
- guide students in self-assessment;
- use student data, observations of teaching, and interactions with colleagues to reflect on and improve teaching practice; and
- use student data, observations of teaching, and interactions with colleagues to report student achievement and opportunities to learn to students, teachers, parents, policy makers, and the general public.

Teaching Standard D

Teachers of science design and manage learning environments that provide students with the time, space, and resources needed for learning science. In doing this, teachers

- structure the time available so that students are able to engage in extended investigations;
- create a setting for student work that is flexible and supportive of science inquiry;
- ensure a safe working environment;
- make the available science tools, materials, media, and technological resources accessible to students;
- identify and use resources outside the school; and
- engage students in designing the learning environment.

Teaching Standard E

Teachers of science develop communities of science learners that reflect the intellectual rigor of scientific inquiry and the attitudes and social values conducive to science learning. In doing this, teachers

- display and demand respect for the diverse ideas, skills, and experiences of all students;
- enable students to have a significant voice in decisions about the content and context of their work and require students to take responsibility for the learning of all members of the community;
- nurture collaboration among students;
- structure and facilitate ongoing formal and informal discussion based on a shared understanding of rules of scientific discourse; and
- model and emphasize the skills, attitudes, and values of scientific inquiry.

Teaching Standard F

Teachers of science actively participate in the ongoing planning and development of the school science program. In doing this, teachers

- plan and develop the school science program,
- participate in decisions concerning the allocation of time and other resources to the science program, and
- participate fully in planning and implementing professional growth and development strategies for themselves and their colleagues.

Reference

National Research Council (NRC). 1996. *National science education standards*. Washington, DC: National Academies Press.